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EXAMINER				
VU, NGOC YEN T				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/743,315

Applicant(s)

PRETLOVE ET AL.

Examiner

NGOC-YEN T. VU

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-7,9-20,22-28 and 30-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-7,9-20,22-28 and 30-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(c) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/26/2009 has been entered.

Response to Amendment

2. The amendments, filed 01/26/09, have been entered and made of record. Claims 1-3, 5-7, 9-20, 22-28 and 30-33 are pending and considered on the merits.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-3, 5-7, 9-20, 22-28 and 30-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, on line 10 the phrase "a first specifying unit configured to specify a position and an orientation" (emphasis added) renders the claim indefinite because it is unclear which element's position and orientation the first specifying unit specifies. See MPEP § 2173.05(d).

Regarding claim 5, on line 3 the phrase "registering unit" renders the claim indefinite because it is unclear which registering unit, first or second, the claimed invention refers to.

Claims 1-3, 6-7, 9-14 and 30-33 are rejected as they depend on the reject claim 1.

Regarding claim 15, on line 6 the phrase "the specified position and orientation" (line 6) and "specifying a position and an orientation" (line 14) (emphasis added) renders the claim indefinite because it is unclear which element's position and orientation the specifying unit specifies.

Regarding claim 16, on lines 1-2 the phrase "specifying a position and an orientation" (emphasis added) renders the claim indefinite because it is unclear which specifying unit the claim refers to.

Regarding claim 17, on line 2 the phrase "said view" renders the claim indefinite because it is unclear which view, first or second, the claim refers to.

Claims 18-20 and 22-27 are rejected as they depend on the reject claim 15.

Regarding claim 28, on line 18 the phrase "specifying a position and an orientation" (emphasis added) renders the claim indefinite because it is unclear which element's position and orientation the specifying unit specifies.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
6. Claims 1-3, 5-7, 9-20, 22-28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allard (US 6,535,793) in view of Ebersole et al. (US 2002/0010734).

Regarding *Claim 1*, Allard teaches a system for remote programming of an industrial robot (Fig. 1), the system comprising: a camera (Figs. 1-2, camera 140) for capturing an image, the camera being movably located on the robot (100) at a local site (col. 3:51 – col. 4:4; col. 6:52-59; col. 7:45 – col. 8:15),

a remote display device (heads-up display 310) located at a remote site, physically separated from the local site, for displaying a view received from the robot (col. 5:14 -65),

a first specifying unit (Figs. 3-5, user interface 300) configured to specify a position and an orientation in the remote site in relation to a fixed remote coordinate system (col. 6:5-59; col. 7:6 – col. 8:26), and wherein the display is adapted to display the image received from the robot in dependence on the position and orientation specified by the first specifying unit (Figs. 3-14; col. 9:3-47; col. 11:1 - col. 12:54), and

a communication link configured to communicate information between the local site and the remote site and to communicate to the robot positions and orientations specified by the first specifying unit (col. 4:23-50).

Allard fails to teach a first registering unit configured to generate graphics and register the graphics generated by the first registering unit on the image from the camera, to provide a composite augmented reality image, wherein the first registering unit is adapted to register the generated graphics to the augmented reality image in dependence on the position and orientation specified by the first specifying unit; a second specifying unit configured to specify a position and an orientation of the robot at the local site in relation to a local coordinate system, wherein a position and orientation of the robot is dependent on the position and orientation specified by the first specifying unit in the remote coordinate system; a second registering unit configured to

generate graphics and register the generated graphics on an environment at the local site or an image of the environment of the local site, in dependence on the position and the orientation specified by the second specifying unit; and a local display device configured to display the environment at the local site and the graphics generated by the second registering unit projected on the environment.

In the same field of endeavor, in figures 3-4 Ebersole teaches an augmented reality system comprising one or more local or remote AR station (6), wherein each local or remote AR station includes a first registering unit (Fig. 4, Video mixer 43 and converter 48) configured to generate graphics and register the graphics generated by the first registering unit on the image from the camera (34), to provide a composite augmented reality image (§ 0034, 0039), wherein the first registering unit is adapted to register the generated graphics to the augmented reality image in dependence on the position and orientation specified by the first specifying unit located in a local or remote non-AR station (5) (§ 0034-0036, 0040). Ebersole further teaches a second specifying unit (Fig. 3, tracking system 33 or Fig. 4, tracking station 47) configured to specify a position and an orientation of the robot at the local site in relation to a local coordinate system, wherein a position and orientation of the robot is dependent on the position and orientation specified by the first specifying unit in the remote coordinate system (§ 0058); a second registering unit (Fig. 4, local AR computer 31a) configured to generate graphics and register the generated graphics on an environment at the local site or an image of the environment of the local site, in dependence on the position and the orientation specified by the second specifying unit (§ 0034-0035); and a local display device (Fig. 3, 32 - AR display system or Fig. 4, head-mounted display 45) configured to display the environment at the local site and the graphics

generated by the second registering unit projected on the environment (§ 0028, 0035, 0038-0040, 0058-0059). In light of the teaching from Ebersole, it would have been obvious to one skilled in the art at the time the invention was made to modify the method and system for remote control of mobile robot taught in Allard by having the first registering unit, the second specifying unit, the second registering unit and the local display device in order to provide users benefit up-to-date information received from remote computers or humans over a network

Regarding *Claim 2*, Allard in view of Ebersole teaches the system according to claim 1, wherein said first specifying unit comprises a tracking unit (Allard, Figs. 3-9, user interface 300 & heads-up display 310) adapted to determine a position and orientation of a movable device located at the remote site (Allard, col. 5:13-65; col. 6:52 - col. 7:28; col. 7:45 - col. 8:15), the first registering unit adapted to register the generated graphics on the image in dependence of the position and orientation of the movable device (Ebersole, Fig. 4, head-mounted display 45, § 0034, 0036, 0039), and the camera is arranged such that its position and orientation are dependent on the position and orientation of the movable device (Ebersole teaches that the remote AR station can view any viewpoint which is created in AR using a camera or series of camera that are remotely controlled over the network by the remote viewer, § 0040. In paragraph 0057 Ebersole further teaches that both local and remote can be AR station which cameras can be obviously located at both local and remote stations).

Regarding *Claim 3*, Allard in view of Ebersole teaches the system according to claim 2, wherein said movable device is the remote display device (Ebersole, Fig. 4, head-mounted display 45. It is inherent that the head-mounted display 45 is movable).

Regarding **Claim 5**, Allard in view of Ebersole the system according to claim 1, further comprising a graphical generator (Allard, user interface 300 has overhead map 340, status bar 350 and camera control 360) (Ebersole, Fig. 3, AR display system 32) configured to generate a graphical representation, wherein the registering unit is adapted to generate graphics based on the graphical representation (Allard, Figs. 3-14) (Ebersole, ¶ 0034-0035; In paragraph 0057 Ebersole further teaches that both local and remote can be AR station which cameras can be obviously located at both local and remote stations).

Regarding **Claim 6**, Allard in view of Ebersole teaches the system according to claim 1, further comprising operator input means (Allard, Figs. 3, user interface 300) (Ebersole, Fig. 3, input devices 35 & 39) located at the remote site and configured to feed data related to the graphics to be displayed to the system, wherein the system is adapted to generate the graphics based on said data (Allard, col. 5:18-41; col. 6:5-51) (Ebersole, ¶0031, 0033).

Regarding **Claim 7**, Allard in view of Ebersole the system according to claim 6, wherein said operator input means comprises a pointing device and a tracking unit configured to determine a position of the pointing device (Allard - joystick or direct drive controls 320 – col. 5:20-29) (Ebersole - Fig. 3, input devices 35 & 39 and head-worn tracking device 47) and wherein the system is adapted to generate a graphical representation of a point pointed out by the pointing member based on the position of the pointing device (Allard, col. 5:18-41; col. 6:5-51) (Ebersole, ¶0031, 0033).

Regarding **Claim 9**, Allard in view of Ebersole teaches the system according to claim 1, further comprising a second movable device located at the local site (Allard, heads-up display 310), wherein the second specifying unit comprises a second tracking unit configured to

determine the position and the orientation of the second movable device (Ebersole - Fig. 3, input devices 35 & 39) (Ebersole, ¶ 0034-0035; In paragraph 0057 Ebersole further teaches that both local and remote can be AR station which cameras can be obviously located at both local and remote stations taught in Allard. Allard as modified by Ebersole would have taught a second head-worn tracking device that is used to determine the location & orientation of the camera).

Regarding **Claim 10**, Allard in view of Ebersole teaches the system according to claim 9, wherein said second movable device is the local display device (Allard, heads-up display 310).

Regarding **Claim 11**, Allard in view of Ebersole teaches the system according claim 9, further comprising a second camera for capturing an image, the camera being arranged in a fix relation to the second movable device (Ebersole, ¶ 0034-0035; In paragraph 0057 Ebersole further teaches that both local and remote can be AR station which cameras can be obviously located at both local and remote stations taught in Allard), wherein the second registering unit is adapted to register the generated graphics generated by the second registering unit to the image from the second camera, to provide a composite augmented reality image, and wherein the local display device is adapted to display a view comprising the composite augmented reality image (Allard, col. 5:18-41; col. 6:5-51) (Ebersole, ¶0031, 0033).

Regarding **Claim 12**, Allard in view of Ebersole teaches the system according to claim 1, wherein the remote display device (Allard, heads-up display 310) is adapted to display a view seen from a first visual angle that depends on the position and orientation received from the first specifying unit (Allard, Figs. 9-12; col. 8:41 – col. 9:47) and wherein the local display device (Ebersole, AR display system 32) is adapted to display the same view as the remote display

device seen from a second visual angle that depends on the position and orientation received from the second specifying unit (Ebersole, ¶ 0036, 0038-0040, 0059).

Regarding *Claim 13*, Allard in view of Ebersole teaches the system according to claim 1, wherein the communication link is configured to transfer voices between the remote and the local site (Ebersole, ¶ 0060-0061).

Regarding *Claim 14*, Allard in view of Ebersole teaches the system according to claim 1, wherein the communication link comprises a network (Allard, col. 4:23-50) (Ebersole, ¶0032).

Regarding *Claim 30*, Allard in view of Ebersole teaches the system according to claim 1, wherein the system is configured for remote programming of an industrial robot by controlling movements of the robot at the local site and teaching the robot one or more waypoints to carry out a task (Allard, Fig. 1, robot 100; col. 3:28—col. 4:4).

Regarding *Claims 15-20, 22-25 and 27-28*, although the wording is different, the material is considered substantively equivalent to the material associated with claims 1-3, 5, 7, 9 and 11-12, respectively, as discussed above.

Regarding *Claim 26*, Allard in view of Ebersole teaches the method according to claim 25, further comprising generating a local graphical representation (Ebersole, Fig. 3, AR display system 32), generating a remote graphical representation (Allard, Figs. 3-14), transferring the local and remote graphical representations between the local and the remote site (Allard, col. 4:23-50) (Ebersole, ¶0032), generating the remote first graphics based on the local and the remote graphical representation (Allard, Figs. 3-14; col. 9:3-47; col. 11:1 - col. 12:54), and generating the second graphics based on the local and the remote graphical representation (Ebersole, ¶ 0028, 0035, 0038-0040, 0058-0059)

7. Claims 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allard in view of Ebersole as applied to claim 11 above, and further in view of Ellenby et al. (US 5,815,411).

Regarding **Claim 31**, Allard in view of Ebersole teaches the system according to claim 11, however, Allard and Ebersole fail to teach a handheld display device comprising the display member and the camera. In the same field of endeavor, Ellenby teaches a vision system of image augmented reality wherein an image of a real scene is combined with information from a data base, wherein the system includes a handheld display device (Figs. 1-4 - binoculars being handheld) comprising a display member (13) and a camera (9). In light of the teaching from Ellenby, it would have been obvious to one of ordinary skill in the art at the time of the invention to allow the head mounted displays taught by Allard and Ebersole as viewed to be a handheld tracked display in order to offer the user a preferred method of viewing (Ellenby, col. 3:63, col. 9:47-51).

Regarding **Claim 32**, Ellenby teaches that the handheld display device is arranged so that the user seems to look directly through the display (col. 9:47-51; Claim 4).

8. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Allard in view of Ebersole as applied to claim 1 above, and further in view of Nose et al. (US 5,079,491).

Regarding **Claim 33**, Allard in view of Ebersole teaches the system according to claim 1, however, Allard and Ebersole fail to teach the robot comprises elements for a paint application. Nose teaches in figure 1 a robot control system including a robot (14), a robot controller (20) and a remote teaching box (Fig. 3, box 18) for teaching the robot for paint application (col. 1:16-22; col. 5:36 – col. 6:3). In light of the teaching from Nose, it would have been obvious to one

skilled in the art at the time the invention was made to teach the robot taught in Allard for a paint application since Allard specifically teaches that the invention has broad applicability for the remote control of robotic devices (Allard, col. 1:11-25).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NGOC-YEN T. VU whose telephone number is (571)272-7320. The examiner can normally be reached on Mon. – Fri. from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on 571-272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ngoc-Yen T. VU/
Primary Examiner, Art Unit 2622
04/06/2009